

Complete Listing of Claims

Claim 1 (Currently amended). An isolated or purified cell which is recombinant or genetically modified to contain and or co-express a cytidine monophosphate sialic acid (CMP- sialic acid SA) synthase gene and a sialic acid phosphate synthase (SAS) gene, wherein said cell is capable of producing donor substrate CMP-SA above a ~~level~~ levels produced before said cell was made recombinant or genetically modified, when provided with N-acetylmannosamine (ManNAc).

Claims 2-47 (Cancelled)

48. (Previously presented) The isolated or purified cell of claim 1, which is an insect cell.

49. (Currently amended) The insect cell of claim 48, wherein said insect cell is of a species selected from the group consisting of:

- (a) *Spodoptera frugiperda*;
- (b) *Trichoplusia ni*;
- (c) *Estigmena acrea*; and,
- (d) *Drosophila*.

50. (Previously presented) The isolated or purified cell of claim 1, which is a yeast cell.

51. (Previously presented) The isolated or purified cell of claim 1, which is a plant cell.

52. (Previously presented) The isolated or purified cell of claim 1, which is a bacterial cell.

53. (Previously presented) The isolated or purified cell of claim 1, which is a fungal cell.

54. (Previously presented) The isolated or purified cell of claim 1, wherein the donor substrate

CMP-SA is CMP-Neu5Ac (cytidine monophosphate-*N*-acetylneuraminic acid).

55. (Currently amended) ~~The isolated or purified cell of claim 1~~ An isolated or purified cell that is recombinant or genetically modified to contain and co-express a CMP-sialic acid synthase gene and a sialic acid phosphate synthase gene, said cell producing the donor substrate CMP-SA above a level produced before said cell was made recombinant or genetically modified, wherein the donor substrate CMP-SA is CMP-KDN (cytidine monophosphate-2-keto-3-deoxy-D-*glycero*-D-*galacto*-nonoic acid).

56. (Currently amended) The isolated or purified cell of claim 1, wherein said CMP-sialic acid synthase gene and said sialic acid phosphate synthase gene are ~~human~~ isolated from a human source.

57. (Currently amended) An isolated or purified cell from a recombinant or genetically engineered cell line which contains and co-expresses a CMP-sialic acid synthase gene and a sialic acid phosphate synthase gene to produce a donor substrate CMP-SA at a higher level than a cell from a natural parent cell line corresponding to said recombinant or genetically engineered cell line, when provided with N-acetylmannosamine (ManNAc).

58. (Previously presented) The isolated or purified cell of claim 57, which is an insect cell.

59. (Currently amended) The insect cell of claim 58, wherein said insect cell is of a species selected from the group consisting of:

- (a) *Spodoptera frugiperda*;
- (b) *Trichoplusia ni*;
- (c) *Estigmena acrea*; and,
- (d) *Drosophila*.

60. (Previously presented) The isolated or purified cell of claim 57, which is a yeast cell.
61. (Previously presented) The isolated or purified cell of claim 57, which is a plant cell.
62. (Previously presented) The isolated or purified cell of claim 57, which is a bacterial cell.
63. (Previously presented) The isolated or purified cell of claim 57, which is a fungal cell.
64. (Previously presented) The isolated or purified cell of claim 57, wherein the donor substrate CMP-SA is CMP-Neu5Ac (cytidine monophosphate-*N*-acetylneuraminic acid).
65. (Currently amended) ~~The isolated or purified cell of claim 57~~ An isolated or purified cell from a recombinant or genetically engineered cell line which contains and co-expresses a CMP-sialic acid synthase gene and a sialic acid phosphate synthase gene to produce a donor substrate CMP-SA at a higher level than a cell from a parent cell line corresponding to said recombinant or genetically engineered cell line, wherein the donor substrate CMP-SA is CMP-KDN (cytidine monophosphate-2-keto-3-deoxy-D-*glycero*-D-*galacto*-nonoic acid).
66. (Currently amended) The isolated or purified cell of claim 57 wherein said CMP-sialic acid synthase gene and said sialic acid phosphate synthase gene are ~~human~~ isolated from a human source.
67. (New) The isolated or purified cell of claim 55, which is an insect cell.
68. (New) The insect cell of claim 55, wherein said insect cell is of a species selected from the group consisting of:
- (a) *Spodoptera frugiperda*;
 - (b) *Trichoplusia ni*;

(c) *Estigmena acrea*; and,

(d) *Drosophila*.

69. (New) The isolated or purified cell of claim 55, which is a yeast cell.

70. (New) The isolated or purified cell of claim 55, which is a plant cell.

72. (New) The isolated or purified cell of claim 55, which is a bacterial cell.

73. (New) The isolated or purified cell of claim 55, which is a fungal cell.

74. (New) The isolated or purified cell of claim 55, which is a mammalian cell.

75. (New) The isolated or purified cell of claim 55, wherein said CMP-sialic acid synthase gene and said sialic acid phosphate synthase gene are isolated from a human source.

76. (New) The isolated or purified cell of claim 65, which is an insect cell.

77. (New) The insect cell of claim 65, wherein said insect cell is of a species selected from the group consisting of:

(a) *Spodoptera frugiperda*;

(b) *Trichoplusia ni*;

(c) *Estigmena acrea*; and,

(d) *Drosophila*.

78. (New) The isolated or purified cell of claim 65, which is a yeast cell.

79. (New) The isolated or purified cell of claim 65, which is a plant cell.

80. (New) The isolated or purified cell of claim 65, which is a bacterial cell.
81. (New) The isolated or purified cell of claim 65, which is a fungal cell.
82. (New) The isolated or purified cell of claim 65, which is a mammalian cell.
83. (New) The isolated or purified cell of claim 65, wherein said CMP-sialic acid synthase gene and said sialic acid phosphate synthase gene are isolated from a human source.
84. (New) The cell of claim 1 wherein said cell is provided with ManNAc by addition of ManNAc to media in which said cell is grown.
85. (New) The cell of claim 1 wherein said cell is provided with ManNAc by genetically engineering said cell to catalyze synthesis of ManNAc.
86. (New) The cell of claim 85, wherein said cell is genetically engineered to contain or express an epimerase that synthesizes ManNAc.
87. (New) The cell of claim 86, wherein said epimerase is UDP-GlcNAc-2 epimerase.
88. (New) The cell of claim 86, wherein said epimerase is GlcNAc-2 epimerase.
89. (New) The cell of claim 57 wherein said cell is provided with ManNAc by addition of ManNAc to media in which said cell is grown.
90. (New) The cell of claim 57 wherein said cell is provided with ManNAc by genetically engineering said cell to catalyze synthesis of ManNAc.

91. (New) The cell of claim 90, wherein said cell is genetically engineered to contain or express an epimerase that synthesizes ManNAc.

92. (New) The cell of claim 91, wherein said epimerase is UDP-GlcNAc-2 epimerase.

93. (New) The cell of claim 91, wherein said epimerase is GlcNAc-2 epimerase.

94. (New) The cell of claim 57 wherein said cell also contains SA precursor GlcNAc above endogenous levels as a result of supplementation of cell growth medium with SA precursor GlcNAc.

95. (New) The cell of claim 1, wherein said cell is a mammalian cell.

96. (New) The isolated or purified cell of claim 57, which is a mammalian cell.